What is Claimed is:

1. A method for processing a substrate, comprising:

depositing a barrier layer on the substrate by introducing a processing gas comprising an organosilicon compound into a processing chamber, wherein the organosilicon compound has the formula $SiH_a(CH_3)_b(C_6H_5)_c$, wherein a is 0 to 3, b is 0 to 3, and c is 1 to 4, and reacting the processing gas to deposit the barrier layer, wherein the barrier layer has a dielectric constant less than 4; and

depositing a first dielectric layer adjacent the barrier layer, wherein the dielectric layer comprises silicon, oxygen, and carbon and has a dielectric constant of about 3 or less.

2. The method of claim 1, wherein the dielectric layer has a carbon content between about 5 and about 30 atomic percent excluding hydrogen atoms.

3. The method of claim 2, wherein the dielectric layer is deposited by oxidizing an organosiliane or organosiloxane compound in a plasma enhanced chemical vapor deposition technique.

4. The method of claim 3, wherein the dielectric layer is deposited by reacting trimethylsilane and oxygen in a plasma enhanced chemical vapor deposition technique.

5. The method of claim 3, wherein the dielectric layer is deposited under plasma conditions comprising a high frequency RF power density from about 0.16 W/cm^2 to about 0.48 W/cm^2.

6. The method of claim 1, wherein the dielectric layer is deposited prior to depositing the barrier layer.

7. The method of claim 1, wherein the organosilicon compound comprises diphenylmethylsilane, dimethylphenylsilane, or combinations thereof.

8. The method of claim 1, wherein the processing gas further includes a dopant component selected from the group of an oxygen-containing compound, a nitrogen-containing compound a boron-containing compound, a phosphorus-containing compound, and combinations thereof.

9. The method of claim 8, wherein the oxygen-containing compound is selected from the group of oxygen, ozone, a siloxane, and combinations thereof.

10. The method of claim 8, wherein the nitrogen-containing compound is selected from the group of nitrogen gas, ammonia, a silazane, and combinations thereof.

11. The method of claim 1, wherein the processing gas further comprises an inert gas selected from the group of argon, helium, neon, xenon, or krypton, and combinations thereof.

12. The method of claim 1, wherein the barrier layer comprises less than about 15 atomic percent of oxygen.

13. A method for processing a substrate, comprising:

depositing a barrier layer on the substrate by introducing a processing gas comprising an organosilicon compound into a processing chamber, wherein the organosilicon compound has the formula $SiH_a(CH_3)_b(C_6H_5)_c$, wherein a is 1 or 2, b is 1 or 2, and c is 1 or 2, and reacting the processing gas to deposit the barrier layer, wherein the barrier layer has a dielectric constant of less than 4; and

depositing a dielectric layer adjacent the barrier layer, wherein the dielectric layer has a dielectric constant less than 4.

14. The method of claim 13, wherein the dielectric layer has a carbon content between about 5 and about 30 atomic percent excluding hydrogen atoms.

15. The method of claim 13, wherein the dielectric layer is deposited by oxidizing an organosiliane compound in a plasma enhanced chemical vapor deposition technique.

16. The method of claim 15, wherein the dielectric layer is deposited by reacting trimethylsilane and oxygen in a plasma enhanced chemical vapor deposition technique.

17. The method of claim 15, wherein the dielectric layer is deposited under plasma conditions comprising a high frequency RF power density from about 0.16 W/cm^2 to about 0.48 W/cm^2.

18. The method of claim 13, wherein the dielectric layer is deposited prior to depositing the barrier layer.

19. The method of claim 13, wherein the organosilicon compound comprises diphenylmethylsilane, dimethylphenylsilane, or combinations thereof.

20. The method of claim 13, wherein reacting the organosilicon compound comprises reacting the organosilicon compound with an oxygen-containing compound selected from the group of oxygen, ozone, a siloxane, and combinations thereof.

21. The method of claim 20, wherein the oxygen-containing compound is selected from the group of oxygen, ozone, a siloxane, and combinations thereof.

22. The method of claim 13, wherein the processing gas further includes a dopant component selected from the group of a nitrogen-containing compound a boron-containing compound, a phosphorus-containing compound, and combinations thereof.

23. The method of claim 22, wherein the nitrogen-containing compound is

selected from the group of nitrogen gas, ammonia, a silazane, and combinations thereof.

24. The method of claim 13, wherein the processing gas further comprises an inert gas selected from the group of argon, helium, neon, xenon, or krypton, and combinations thereof.

25. The method of claim 13, wherein the barrier layer comprises less than about 15 atomic percent of oxygen.